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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,749	07/31/2001	Yasutaka Ito	110575.01	2777

25944 7590 10/18/2002

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EXAMINER

JEFFERY, JOHN A

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 10/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/917,749

Applicant(s)

ITO, YASUTAKA

Examiner

John A. Jeffery

Art Unit

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 8/12/02 & 8/13/02.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 11-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12 August 2002 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

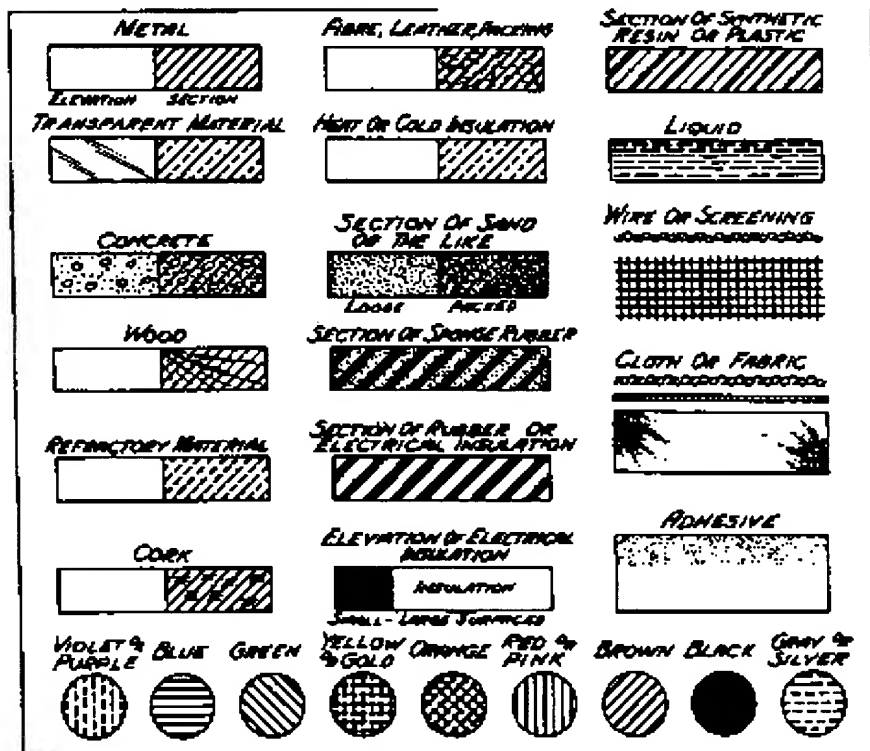
- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 3742

**DETAILED ACTION*****Drawings***

The drawings are objected to because of the following informalities:

Figs. 1-3, 5, 7-11, 13: Proper cross-sectional hatching is required to properly denote refractory materials in accordance with MPEP 608.02 (see the drawing below for proper hatching examples). The submitted proposed correction shows metallic hatching--not refractory hatching.



Art Unit: 3742

The response to this action must include a separate letter addressed to the examiner and contain: (1) sketches showing in red the drawing changes required above and (2) a request that the examiner approve the changes as shown on the sketches.

IMPORTANT NOTE: The filing of new formal drawings to correct the noted defect may be deferred until the application is allowed by the examiner, but the print or pen-and-ink sketches with proposed corrections in red ink is required in response to this office action, and may not be deferred.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 11-13, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe et al (US6133557) in view of Jordan et al (US1998764) or Lowell et al (US4384192) or Lowell (US4233497) or Sato et al (US5344492) or Lytle (US2724658) or Wright (US3336558). Kawanabe et al discloses first heater 12 and second heater 13 disposed within ceramic substrate 11, the heaters being offset relative to each other in the thickness direction. See Figs. 5, 6, and col. 10, line 62 - col. 12, line

Art Unit: 3742

6. Also, note single heater 12 in Fig. 3A. The claims differ from the previously cited prior art in calling for offsetting at least part of the heat generation pattern on a level different from that of others of the pattern in a substrate thickness direction. Offsetting a single electric heater in a thickness direction in a substrate is well known in the art as evidenced by Jordan et al (US1998764) noting Fig. 2 where electric heater b is offset in the thickness direction of substrate d so that a desired heating gradient is achieved. See also Fig. 3 of Lowell et al (US4384192) and Fig. 2 of Lowell (US4233497). Also, Sato et al (US5344492) discloses in Figs. 8a-8c offsetting a single electric heater pattern in the thickness direction. Moreover, Lytle (US2724658) discloses offsetting a single electric heater pattern on a flat substrate by varying the heater's thickness. See Fig. 6 and col. 7, lines 36-42. Lastly, note Wright (US3336558) who in Fig. 2 teaches the well-known idea of offsetting a resistive element along a flat substrate to achieve a desired resistance gradient per unit length. In view of Jordan et al (US1998764) or Lowell et al (US4384192) or Lowell (US4233497) or Sato et al (US5344492) or Lytle (US2724658) or Wright (US3336558), it would have been obvious to one of ordinary skill in the art to offset the resistive electric heating pattern of Kawanabe et al so that a desired heating gradient was achieved using a single element in lieu of multiple elements thereby precluding the need for additional resistive elements thus reducing apparatus parts and lowering manufacturing costs.

Claims 14-19 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe et al (US6133557) in view of Kimura (US5331134). The claims differ from the previously cited prior art in calling for the maximum amount of

Art Unit: 3742

offset displacement to be within a specified range. While Kawanabe et al (US6133557) does not expressly specify the amount of distance the heaters are displaced, offsetting electric heaters at a distance of 500 $\mu$  is conventional and well known in the art as evidenced by Kimura (US5331134) noting electric heaters 2, 2' which are offset from each other by the thickness of the ceramic substrate 1. As noted in col. 3, lines 41-42, the minimum thickness of the ceramic substrate is 0.5 mm (500 $\mu$ ). As noted in col. 1, line 58 - col. 2, line 12, providing two offset heaters improves temperature uniformity over the whole surface of the heater. In view of Kimura (US5331134), it would have been obvious to one of ordinary skill in the art to offset the electric heaters at a 500 $\mu$  distance in the previously described apparatus so that the individual heaters were disposed in approximately the same horizontal plane thereby improving uniformity of heating. With regard to the claims which recite upper limits having lower values of offset, the chosen offset distance would be obvious to one of ordinary skill in the art given a desired heating pattern along the substrate surface. Given a certain tolerance for temperature deviations along the substrate surface, one of ordinary skill in the art would know to limit the offset between heaters to a specified amount to minimize such temperature deviation.

Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe et al (US6133557) or Okuda et al (US5750958) in view of Niori et al (US5280156). The claims differ from the previously cited prior art in calling for the heater to comprise a spiral wire. Providing a spiral wire embedded in a ceramic

Art Unit: 3742

substrate is conventional and well known in the art as evidenced by Niori et al (US5280156) noting spiral wire 3. As is well known in the art, spiraling an electric heater provides numerous advantages over a straight electric heater including (1) maximizing heating element area per unit length of the heater by spiraling the heater, and (2) providing more flexibility in the heater structure thereby accounting for thermal expansion. In view of Niori et al (US5280156), it would have been obvious to one of ordinary skill in the art to provide a spiraled electric heater in lieu of the electric heater structures of the previously described heaters in order to (1) maximize heating element area per unit length of the heater by spiraling the heater, and (2) provide more flexibility in the heater structure thereby accounting for thermal expansion expansion.

### ***Response to Arguments***

Applicant's arguments have been considered but are deemed to be moot in view of the new grounds of rejection.

### ***Final Rejection***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 3742

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Conclusion***

Any inquiry concerning this or earlier communications from the examiner should be directed to John A. Jeffery at telephone number (703) 306-4601 or fax (703) 305-3463. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM EST. The examiner can also be reached on alternate Fridays.

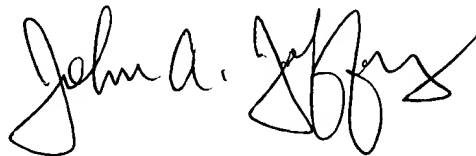
The fax phone numbers for the organization where this application or proceeding is assigned are:

Before Final	(703) 872-9302
After Final	(703) 872-9303
Customer Service	(703) 872-9301



Art Unit: 3742

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0861.

A handwritten signature in black ink, appearing to read "John A. Jeffery". The signature is fluid and cursive, with the first name "John" being more legible than the last name "Jeffery".

**JOHN A. JEFFERY  
PRIMARY EXAMINER**

**10/17/02**